

Substitute CRF Seq Listing 2009-09-30

<110> CHOE, Mu-Hyeon  
CHOI, Seong-Hyeok  
LEE, Yong-Chan  
KWON, Hye-Won  
WON, Jae-Seon  
YU, Mi-Hyun  
SONG, Jeong-Hwa  
KIM, Yong-Jae

<120> The Dimer of Chimeric Recombinant Binding  
Domain-Functional Group Fusion formed via  
Disulfide-bond-bridge and The Process  
For Producing The Same

<130> 428.1060

<140> US 10/562,627

<141> 2005-12-22

<150> PCT/KR2004/001595

<151> 2004-06-30

<150> KR2003-0043599

<151> 2003-06-30

<160> 13

<170> KopatentIn 1.71

<210> 1

<211> 1749

<212> DNA

<213> Artificial Sequence

<220>

<223> pMC74 plasmid coding sequence

<400> 1  
atggatgtga agctggtgga atctggagga ggcttagtgc agcctggagg gtccctgaaa 60  
ctctctgtg caacctctgg attcactttc agtgactatt acatgtattg ggttcgccag 120  
actccagaga agaggctgga gtgggtcgca tacattagta atgatgatag ttccgcccgt 180  
tattcagaca ctgtaaaggg cgggttcacc atctccagag acaatgccag gaacacctc 240  
tacctgcaaa tgagccgtct gaagtctgag gacacagcca tatattcctg tgcaagagga 300  
ctggcctggg gagcctgggt tgcctactgg ggccaaggga ctctggtcac tgtctctgca 360  
gccaaaaaga cccccccatc tgtctatcca ctggcccttg gatctgctgc ccaaactaac 420  
tccatggtga cctgggatg cctggtcaag ggctatttcc ctgagccagt gacagtgacc 480  
tggaactctg gatccctgtc cagcgggtgtg cacaccttcc cagctgtcct gcagtctgac 540  
ctctacactc tgagcagctc agtgactgtc cctccagca cctggcccag cgagaccgtc 600  
acctgcaacg ttgcccaccc ggccagcagc accaaggtgg acaagaaaat tgtgcccagg 660

Substitute CRF Seq Listing 2009-09-30

|  |      |
|--|------|
| gatttggtgta gtaagcctag cataagtaca aaagcttccg gaggtcccga gggcggcagc | 720  |
| ctggccgcgc tgaccgcgca ccaggcttgc cacctgccgc tggagacttt caccctcat   | 780  |
| cgcagccgc gggctggga acaactggag cagtgcggt atccggtgca gcgctggtc      | 840  |
| gcctctacc tggcgccgc gctgtcgtg aaccaggtcg accaggtgat ccgcaacgcc     | 900  |
| ctggccagcc ccggcagcg cggcgacctg ggcgaagcga tccgcgagca gccggagcag   | 960  |
| gccctcttg cctgacct ggccgcgcc gagagcgagc gcttcgtccg gcagggcacc      | 1020 |
| ggcaacgacg aggcggcgc ggccaacggc ccggcggaca ggcgcgacgc cctgctggag   | 1080 |
| cgcaactatc ccactggcgc ggagttctc ggcgacggcg gcgacgtcag cttcagcacc   | 1140 |
| cgcggcagc agaactggac ggtggagcgg ctgctccagg cgcaccgcca actggaggag   | 1200 |
| cgcggctatg tgttcgtcgg ctaccacggc accttctcg aagcggcgc aagcatcgtc    | 1260 |
| ttcggcggg tgcgcgcgc cagccaggac ctgcagcga tctggcgcgg ttctatatc      | 1320 |
| gccggcgatc cggcgtggc ctacggctac gccaggacc aggaaccgca cgcacggcg     | 1380 |
| cggatccgca acggtgccct gctgcgggtc tatgtgcgc gctcgacct gccgggcttc    | 1440 |
| taccgacca gcctgacct ggccgcgcg gaggcggcgg gcgaggtcga acggtgate      | 1500 |
| ggccatccgc tgccgtgcg cctggacgcc atcaccggcc ccgaggagga aggcggcgc    | 1560 |
| ctggagacca ttctcgctg gccgtggcc gagcgacccg tggtagttcc ctccgcgatc    | 1620 |
| cccaccgacc cgcgcaacgt cggcgccgac ctgcacctgt ccagcatccc cgacaaggaa  | 1680 |
| caggcgatca gcgcctgcc ggactacgcc agccagccc gcaaaccgcc gcgcgaggac    | 1740 |
| ctgaagtaa  | 1749 |

<210> 2  
 <211> 1764  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> pMH21 plasmid coding sequence

|  |     |
|--|-----|
| <400> 2  |     |
| atggaggtga agctgggtgga atctggagga ggcttagtgc agcctggagg gtccctgaaa | 60  |
| ctctcctgtg caacctctgg attcactttc agtgactatt acatgtattg ggttcgccag  | 120 |
| actccagaga agaggctgga gtgggtcgca tacattagta atgatgatag ttccgcgct   | 180 |
| tattcagaca ctgtaaaggg ccggttcacc atctccagag acaatgccag gaacacctc   | 240 |
| taoctgcaaa tgagccgtct gaagtctgag gacacagcca tatattctg tgcaagagga   | 300 |
| ctggcctggg gagcctgggt tgcctactgg ggccaaggga ctctggtcac tgtctctgca  | 360 |

Substitute CRF Seq Listing 2009-09-30

```

gccccaaacga cccccccatc tgtctatcca ctggccccctg gatctgctgc ccaaactaac 420
tccatggtga ccttgggatg cctggtcaag ggtattttcc ctgagccagt gacagtgacc 480
tggaactctg gatccctgtc cagcgggtgtg cacaccttc cagctgtcct gcagtctgac 540
ctctacactc tgagcagctc agtgactgtc cctccagca cctggcccag cgagaccgtc 600
acctgcaacg ttgcccacc ggccagcagc accaagggtg acaagaaaat tgtgcccagg 660
gattgtggta gtaagccttg cataagtaca aaagcttctg gtggtggcgg atctggaggt 720
cccagggcg gcagcctggc cgcgtgacc gcgcaccagg cttgccacct gccgtggag 780
actttcacc gtcctcgcca gccgcgcggc tgggaacaac tggagcagt cggctatccg 840
gtgcagcggc tggtcgcct ctacctggc gcgcggctgt cgtggaacca ggtcgaccag 900
gtgatccga acgccttggc cagccccggc agcggcggcg acctgggcca agcgatccgc 960
gagcagccgg agcaggcccg tctggccctg acctggccg ccgccgagag cgagcgcttc 1020
gtcgggcagg gcaccggcaa cgacgaggcc ggcgcgcca accgcccggc ggacagcggc 1080
gagccctgc tggagcgcaa ctatccact ggcgcgaggt tcctcggcca cggcgcgac 1140
gtcagcttca gcaccgcgg caocgagaac tggacggtg agcggtgct ccaggcgac 1200
cgccaactgg aggagcggc ctatgtgttc gtggctacc accgcacct cctcgaagcg 1260
gcgcaaagca tcgtcttcgg cggggtgcgc gcgcgcagcc aggacctga cgcgatctgg 1320
cgcggtttct atatgcggc cgatccggc ctggcctacg gctacgcca ggaccaggaa 1380
cccagcgac gcggccggat ccgcaacggt gcctgctgc gggctctatgt gccgcgctcg 1440
agcctgcgg gcttctacc caccagcctg acctggccg ccgcggaggc ggcgggcgag 1500
gtcgaacggc tgatcgcca tccgtgcgc ctgcgcctgg acgcatcac cggccccgag 1560
gaggaaggcg ggcgcttga gaccattctc ggctggcgc tggccgagcg caccgtggtg 1620
attcctcgg cgatccccc acgcccgcgc aacgtcggcg gcgacctga cccgtccagc 1680
atccccgaca aggaacaggc gatcagcgc ctgccggact acgccagcca gcccgcaaa 1740
ccgcgcgcg aggacctgaa gtaa 1764

```

```

<210> 3
<211> 1749
<212> DNA
<213> Artificial Sequence
<220>
<223> pCE2 plasmid coding sequence

```

```

<400> 3
atggatgtga agctggtgga atctggagga ggcttagtgc agcctggagg gtccctgaaa 60

```

Substitute CRF Seq Listing 2009-09-30

|  |      |
|--|------|
| ctctcctgtg caacctctgg attcactttc agtgactatt acatgtattg ggttcgccag  | 120  |
| actccagaga agaggctgga gtgggtcgca tacattagta atgatgatag ttccgcccgt  | 180  |
| tattcagaca ctgtaaaggg ccggttcacc atctccagag acaatgccag gaacacctc   | 240  |
| tacctgcaaa tgagccgtct gaagtctgag gacacagcca tatattcttg tgcaagagga  | 300  |
| ctggcctggg gagcctggtt tgcttactgg ggccaaggga ctctggtcac tgtctctgca  | 360  |
| gccaaaacga caccoccato tgtctatcca ctggcccctg gatctgctgc ccaaactaac  | 420  |
| tccatggtga ccttgggatg cctggtaag ggctatttcc ctgagccagt gacagtgacc   | 480  |
| tggaactctg gatedctgtc cagcgggtgtg cacaccttcc cagctgtcct gcagtctgac | 540  |
| ctctacactc tgagcagctc agtgactgtc cctccagca cctggcccag cgagaccgtc   | 600  |
| acctgcaacg ttgccacccc ggccagcagc accaagggtg acaagaaaat tgtgccagg   | 660  |
| gatttgtgta gtaagccttg cataagtaca aaagcttccg gaggtcccga gggcggcagc  | 720  |
| ctggccgcgc tgaccgcgca ccaggcttgc cacctgccgc tggagacttt caccctcat   | 780  |
| cgccagccgc gcggctggga acaactggag cagtgcggct atccggtgca gcggctggtc  | 840  |
| gcctctacc tggcgggcgc gctgtcgtgg aaccaggctg accaggatgat ccgcaacgcc  | 900  |
| ctggccagcc ccggcagcgg cggcgacctg ggccaagcga tccgcgagca gccggagcag  | 960  |
| gcccgtctgg ccttgacctt ggccgcgcgc gagagcgagc gcttcgtccg gcagggcacc  | 1020 |
| ggcaacgacg aggcgggcgc ggccaacggc ccggcggaca gcggcgacgc cctgctggag  | 1080 |
| cgcaactatc ccactggcgc ggagtctctc ggcgacggcg gcgacgtcag cttcagcacc  | 1140 |
| cgcggcacgc agaactggac ggtggagcgg ctgctccagg cgcaccgcca actggaggag  | 1200 |
| cgcggctatg tgttcgtcgg ctaccacggc accttctctg aagcggcgca aagcatcgtc  | 1260 |
| ttcggcgggg tgccgcgcgc cagccaggac ctcgacgcga tctggcgcgg tttctatata  | 1320 |
| gcccggcgtc cggcgcgtgg ctacggctac gcccaggacc aggaaccgca cgcacgcggc  | 1380 |
| cggatccgca acggtgacct gctgcgggtc tatgtgccgc gctcgagcct gccgggcttc  | 1440 |
| taccgcacca gcttgacctt ggccgcgcgc gaggcggcgg gcgaggtcga acggtgate   | 1500 |
| ggccatccgc tgccgtcgcg cctggacgcc atcaccggcc ccgaggagga aggcgggcgc  | 1560 |
| ctggagacca ttctcggttg gccgtggcc gagcgcaccg tggatattcc ctcggcgac    | 1620 |
| cccacggacc cgcgcaacgt cggcggcgac ctcgaccgtt ccagcatccc cgacaaggaa  | 1680 |
| caggcgatca gcgccttgc ggactacgcc agccagcccg gcaaaccgcc gcgcgaggac   | 1740 |
| ctgaagtaa  | 1749 |

# Substitute CRF Seq Listing 2009-09-30

<210> 4  
 <211> 672  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> pMC75 plasmid coding sequence

```

<400> 4
atggatgtgc tgatgaccca gtctccattg agtttacctg tcagtcttgg agatcaagcc 60
tccatctctt gcagatctag tcagatcatt gtacatagta atggaaacac ctatttagaa 120
tggtacctgc agaaaccagg ccagtcctca aagctcctga totacaaagt ttccaaccga 180
ttttctgggg tcccagacag gttcagtggc agtggatcag ggacagattt cacactcaag 240
atcagcagag tggaggctga ggatctggga gtttattact gctttcaagg ttcacatggt 300
ccattcaagt tgggctoggg gacaaaagtg gaaataaaac gggctgatgc tgcaccaact 360
gtatccatct tcccaccatc cagtgcagc ttaacatctg gaggtgcctc agtcgtgtgc 420
ttcttgaaca acttctaccc caaagacatc aatgtcaagt ggaagattga tggcagtga 480
cgacaaaatg gcgtcctgaa cagttggact gatcaggaca gcaaagacag cacctacagc 540
atgagcagca ccttcacggt gaccaaggac gagtatgaac gacataacag ctatacctgt 600
gaggccactc acaagacatc aacttcaccc attgtcaaga gcttcaacag gaatgagtgt 660
ggtaaagctt aa 672
    
```

<210> 5  
 <211> 2454  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> pLSC52 plasmid coding sequence

```

<400> 5
atggatgtga agctgggtgga atctggagga ggcttagtgc agcctggagg gtccctgaaa 60
ctctcctgtg caacctctgg attcaacttc agtgactatt acatgtattg ggttcgccag 120
actocagaga agaggctgga gtgggtcgca tacattagta atgatgatag ttccgccgct 180
tattcagaca ctgtaaaggg cgggttcacc atctccagag acaatgccag gaacaccctc 240
tacctgcaaa tgagcogtct gaagtctgag gacacagcca tatattcctg tgcaagagga 300
ctggcctggg gagcctgggt tgcttactgg ggccaaggga ctctggtcac tgtctctgca 360
gccaaaacga cccccccatc tgtctatcca ctggcccttg gatctgctgc ccaaactaac 420
tccatgggtg cctggggatg cctgggtcaag ggctatttcc ctgagccagt gacagtgacc 480
tggaaactct gatccctgtc cagcgggtgt cacaccttcc cagctgtcct gcagtctgac 540
    
```

Substitute CRF Seq Listing 2009-09-30

|  |      |
|--|------|
| ctctacactc tgagcagctc agtgactgtc cctccagca cctggcccag cgagaccgtc   | 600  |
| acctgcaacg ttgcccaccc ggccagcagc accaaggtgg acaagaaaat tgtgcccagg  | 660  |
| gattgtggtg agcccaaata ttgtgacaaa actcacacat gcccaaccgtg cccagcacct | 720  |
| gaactcctgg ggggaccgtc agtcttcctc ttccccccaa aacccaagga caccctcatg  | 780  |
| atctcccgga cccctgaggt cacatgcgtg gtgggtggacg tgagccacga agaccctgag | 840  |
| gtcaagttca actggtacgt ggacggcgtg gaggtgcata atgccaagac aaagccggcg  | 900  |
| gaggagcagt acaacagcac gtaccgtgtg gtcagcgtcc tcaccgtcct gcaccaggac  | 960  |
| tggctgaatg gcaaggagta caagtgcag gtctccaaca aagccctccc agccccatc    | 1020 |
| gagaaaacca tctccaaagc caaagggcag ccccgagaa cacaggtgta caccctgccc   | 1080 |
| ccatcccggg atgagctgac caagaaccag gtcagcctga cctgcctggg caaaggcttc  | 1140 |
| tatcccagcg acatcgccgt ggagtgggag agcaatgggc agccggagaa caactacaag  | 1200 |
| accaagcctc ccgtgctgga ctccgacggc tcttctctcc tctacagcaa gctcacctg   | 1260 |
| gacaagagca ggtggcagca ggggaacgtc ttctcatgct ccgtgatgca tgaggctctg  | 1320 |
| cacaaccact acacgcagaa gagcctctcc ctgtctccgg gtaaaggcgg aggcggatcc  | 1380 |
| ggtggtggcg gttctaaagc ttccggaggt cccgagggcg gcagcctggc cgcgctgacc  | 1440 |
| gcgcaccagg cttgccacct gccgctggag actttcacc ctcctcgcca gccgcgggc    | 1500 |
| tgggaacaac tggagcagtg cggctatccg gtgcagcggc tggtcgccc ctacctggcg   | 1560 |
| gcgcggctgt cgtggaacca ggtcgaccag gtgatccgca acgcccggc cagccccggc   | 1620 |
| agcggcggcg acctgggcga agcgatccgc gacgacccg agcaggccc tctggccctg    | 1680 |
| acctggccg ccgcgcagag cgagcgttc gtccggcagg gcaccggcaa cgacgaggcc    | 1740 |
| ggcgcggcca acggcccggc ggacagcggc gacgcccgc tggagcgcaa ctatcccact   | 1800 |
| ggcgcggagt tctcggcgca cggcggcgac gtcagcttca gcaccgcgg cagcgagaa    | 1860 |
| tggacggtgg agcggctgct ccaggcgcac cgccaactgg aggagcgcgg ctatgtgttc  | 1920 |
| gtcggtacc acggcacctt cctcgaagcg gcgcaaagca tcgtcttcgg cggggtgcgc   | 1980 |
| gcgcgcagcc aggacctga cgcgatctgg cgcggtttct atatcgccg cgatccggcg    | 2040 |
| ctggcctacg gctacgcca ggaccaggaa cccgacgcac gcggccggat ccgcaacggt   | 2100 |
| gccctgctgc gggctctatg gccgcgctcg agcctgcgg gcttctacc caccagcctg    | 2160 |
| acctggccg ccgcggaggc ggccggcgag gtcgaacggc tgatcgcca tccgctgccg    | 2220 |
| ctgcgcctgg acgcatcac cggcccagag gaggaaggcg ggcgcctgga gaccattctc   | 2280 |
| ggctggccgc tggccgagcg caccgtggtg attccctcgg cgatccccac cgaccgcgc   | 2340 |

# Substitute CRF Seq Listing 2009-09-30

aacgtcggcg ggcacctcga cccgtccagc atccccgaca aggaacaggc gatcagcgcc 2400  
 ctgccggact acgccagcca gcccggaaca ccgccgcgcg aggacctgaa gtaa 2454

<210> 6  
 <211> 1233  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> pKL4 plasmid coding sequence

<400> 6  
 atgcatcacc atcaccatca cgatgtgaag ctggtggaat ctggaggagg cttagtgcag 60  
 cctggagggt cctgaaact ctctgtgca acctctggat tcactttcag tgactattac 120  
 atgtattggg ttccgcagac tccagagaag aggtctggagt gggtcgcata cattagtaat 180  
 gatgatagtt ccgccgctta ttcagacact gtaaagggcc ggttcaccat ctccagagac 240  
 aatgccagga acacctctca cctgcaaatg agccgtctga agtotgagga cacagccata 300  
 tattctctgt caagaggact ggcttgggga gcttgggttg ctactgggg ccaagggact 360  
 ctggtcactg tctctgcagc caaaacgaca ccccatctg tctatccact ggcccttggg 420  
 tctgtgtccc aaactaactc catggtgacc ctgggatgcc tggtaagggt ctatttccct 480  
 gagccagtga cagtgcctg gaactctgga tccctgtcca gcggtgtgca caccttccca 540  
 gctgtctctg agtctgacct ctacactctg agcagctcag tgactgtccc ctccagcacc 600  
 tggcccagcg agaccgtcac ctgcaacgtt gccacccgg ccagcagcac caaggtggac 660  
 aagaaaattg tgcccaggga ttgtggtgct aagccttgca tagctacaca agcttccggt 720  
 ggtggcggat ctggagggtg cggaagcgga ggtcccagg tgacaggggg aatggcaagc 780  
 aagtgggata agaagggtat ggacattgcc tatgaggagg cggccttagg ttacaaagag 840  
 ggtgggtgtt ctattggcgg atgtcttata aataacaaag acggaagtgt tctcggctgt 900  
 ggtcacaaca tgagatttca aaagggatcc gccacactac atggtgagat ctccactttg 960  
 gaaaactgtg ggagattaga gggcaaagtg tacaaagata ccactttgta tacgacgctg 1020  
 tctccatgcg acatgtgtac aggtgccatc atcatgtatg gtattccacg ctgtgttgtc 1080  
 ggtgagaacg ttaatttcaa aagtaagggc gagaaatatt tacaaactag aggtcacgag 1140  
 gttgttgttg ttgacgatga gaggtgtaaa aagatcatga aacaatttat cgatgaaaga 1200  
 cctcaggatt ggtttgaaga tattggtgag tag 1233

<210> 7  
 <211> 4871

Substitute CRF Seq Listing 2009-09-30

<212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> pMC74 plasmid full sequence

<400> 7  
 taatacgact cactataggg agaccacaac ggtttccctc tagaaataat tttgtttaac 60  
 ttttaagaagg agatatacat atggatgtga agctgggtgga atctggagga ggcttagtgc 120  
 agcctggagg gtcctgaaa ctctcctgtg caacctctgg attcactttc agtgaactatt 180  
 acatgtattg ggttcgccag actccagaga agaggctgga gtgggtcgca tacattagta 240  
 atgatgatag ttccgcgcgt tattcagaca ctgtaaaggg ccggttcacc atctccagag 300  
 acaatgccag gaacaccctc tacctgcaaa tgagccgtct gaagtctgag gacacagcca 360  
 tatattcctg tgcaagagga ctggcctggg gagcctgggt tgcctactgg ggccaagggg 420  
 ctctggtcac tgtctctgca gccaaaacga cccccccatc tgtctatcca ctggccctcg 480  
 gatctgctgc ccaaactaac tccatgggtga cctgggatg cctgggtcaag ggctatttcc 540  
 ctgagccagt gacagtgacc tggaaactct gatccctgtc cagcgggtgt cacaccttcc 600  
 cagctgtcct gcagtctgac ctctacactc tgagcagctc agtgactgtc cctccagca 660  
 cctggcccag cgagaccgtc acctgcaacg ttgccaccc gccagcagc accaaggtgg 720  
 adaagaaaat tgtgcccagg gattgtggta gtaagcctag cataagtaca aaagcttccg 780  
 gaggtccoga gggcggcagc ctggccgcgc tgaccgcgca ccaggcttgc cacctgccgc 840  
 tggagacttt caccogtcat cgcagccgc gcggtggga acaactggag cagtgcggct 900  
 atccggtgca ggggtgggtc gccctctacc tggcggcgc gctgtcgtgg aaccaggtcg 960  
 accaggtgat ccgcaacgcc ctggccagcc ccggcagcgg cggcgacctg ggcgaagcga 1020  
 tccgcagca gccggagcag gccgtctgg cctgacctt ggccgcgcgc gagagcgagc 1080  
 gcttcgtccg gcagggcacc ggcaacgacg aggcgggcgc ggccaacggc ccggcggaca 1140  
 gggcgacgc cctgctggag cgcaactatc cactgggcgc ggagtctctc ggcgacggcg 1200  
 gcgacgtcag ctccagcacc cgcggcacgc agaactggac ggtggagcgg ctgctccagg 1260  
 cgcaccgcca actggaggag cgcggctatg tgttcgtcgg ctaccacggc accttctctg 1320  
 aagcggcgca aagcatcgtc ttcggcgggg tgccgcgcgc cagccaggac ctgcagcga 1380  
 tctggcgcg tttctatata gccggcgatc cggcgctggc ctacggctac gccaggacc 1440  
 aggaacccga cgcacgcggc cggatccgca acggtgccct gctgcgggtc tatgtgccgc 1500  
 gctcgagcct gccgggcttc taccgcacca gcctgacctt ggccgcgcgc gaggcggcgg 1560  
 gcgaggtcga acggtgatc ggccatccgc tgccgctgcg cctggacgcc atcaccggcc 1620

# Substitute CRF Seq Listing 2009-09-30

|   |      |
|---|------|
| ccgaggagga aggcggggcg ctggagacca ttctcggtcg gccgctggcc gagcgacccg   | 1680 |
| tggtgattec ctcgcgatc cccaccgacc cgcgcaacgt cggcgggcgac ctcgacccgt   | 1740 |
| ccagcatccc cgacaaggaa caggcgatca gcgccctgcc ggactacgcc agccagccccg  | 1800 |
| gcaaaccgcc gcgcgaggac ctgaagtaac tgccgcgacc ggccggctcc cttegcagga   | 1860 |
| gcgggccttc tgggggcctg gccatacabc aggttttctt gatgocagcc caatcgaata   | 1920 |
| tgaattcggc tgctaacaaa gcccgaaaagg aagctgagtt ggcctgctgcc accgctgagc | 1980 |
| aataactagc ataaccocctt gggcctctaa acgggtcttg aggggttttt tgctgaaagg  | 2040 |
| aggaactata tccggatcgg agatcaattc tggcgtaata gcgaagaggc ccgcaccgat   | 2100 |
| cgccttccc aacagttgcg tagcctgaat ggcgaaatggg acgcgcctcg tagcggcgca   | 2160 |
| ttaagcgcg cggtgtggt ggtaacgcgc agcgtgacgc ctacacttgc cagcgcccta     | 2220 |
| gcgcgcgctc ctttcgcttt cttcccttcc ttctctcgca cgttcgcggg ctttcccgct   | 2280 |
| caagctctaa atcggggggt ccttttaggg ttccgattta gtgctttaag gcacctcgac   | 2340 |
| cccaaaaaac ttgattagggt tgatggttca cgtagtgggc catcgccctg atagacgggt  | 2400 |
| tttcgcctt tgacgttggg gtccacgttc tttaatagtg gactcttggt ccaaactgga    | 2460 |
| acaacactca accctatctc ggtctattct ttgatttat aagggtttt gccgatttcg     | 2520 |
| gcctattggt taaaaaatga gctgatttaa caaaaattta acgcgaattt taacaaaata   | 2580 |
| ttaacgttta caatttcagg tggcactttt cggggaaatg tgcgcggaac cctatttgt    | 2640 |
| ttatttttct aaatacatto aaatatgtat ccgctcatga gacaataacc ctgataaatg   | 2700 |
| cttcaataat attgaaaaag gaagagtatg agtattcaac atttcctgtg cgccttatt    | 2760 |
| cctttttttg cggcattttg ccttctgtt ttctctcacc cagaaacgct ggtgaaagta    | 2820 |
| aaagatgctg aagatcagtt ggggtgcacga gtgggttaca tcgaactgga tctcaacagc  | 2880 |
| ggtaagatcc ttgagagttt tcgccccgaa gaacgttttc caatgatgag cacttttaaa   | 2940 |
| gttctgctat gtggcgcggt attatcccggt attgacgccg ggcaagagca actcggtcgc  | 3000 |
| cgcatacact attctcagaa tgacttggtt gactactcac cagtcacaga aaagcatctt   | 3060 |
| acggatggca tgacagtaag agaattatgc agtgctgcc aagcatgag tgataacact     | 3120 |
| gcggccaact tactttctgac aacgatcgga ggaccgaagg agctaaccgc tttttttcac  | 3180 |
| aacatggggg atcatgtaac tcgccttgat cgttggaac cggagctgaa tgaagccata    | 3240 |
| ccaaacgacg agcgtgacac cacgatgcct gtagcaatgg caacaacgtt gcgcaaacta   | 3300 |
| ttaactggcg aactacttac tctagcttcc cggcaacaat taatagactg gatggaggcg   | 3360 |

Substitute CRF Seq Listing 2009-09-30

|   |      |
|---|------|
| gataaagttg caggaccact tctgcgctcg gcccttccgg ctggctgggt tattgctgat   | 3420 |
| aaatctggag cgggtgagcg tgggtctcgc ggtatcattg cagcactggg gccagatggg   | 3480 |
| aagccctccc gtatcgtagt tatctacacg acgggcagtc aggcaactat ggatgaacga   | 3540 |
| aatagacaga tcgctgagat aggtgcctca ctgattaagc attggtaact gtcagaccaa   | 3600 |
| gtttactcat atatacttta gattgattta aaacttcatt tttaatTTaa aaggatctag   | 3660 |
| gtgaagatcc tttttgataa tctcatgacc aaaatccctt aacgtgagtt ttcgttccac   | 3720 |
| tgagcgtcag accccgtaga aaagatcaaa ggatcttctt gagatccttt ttttctgcgc   | 3780 |
| gtaatctgct gcttgcaaac aaaaaaacca ccgctaccag cggtggtttg tttgccggat   | 3840 |
| caagagctac caactctttt tccgaaggta actggcttca gcagagcgca gataccaaat   | 3900 |
| actgtccttc tagtgtagcc gtagttaggc caccacttca agaactctgt agcaccgct    | 3960 |
| acatacctcg ctctgctaata cctgttacca gtggctgctg ccagtggcga taagtctgt   | 4020 |
| cttacogggt tggactcaag acgatagtta ccggataagg cgcagcggtc gggctgaacg   | 4080 |
| gggggttcgt gcacacagcc cagcttgag cgaacgacct acaccgaact gagataccta    | 4140 |
| cagcgtgagc attgagaaaag cgccacgctt cccgaaggga gaaaggcgga caggatatccg | 4200 |
| gtaagcggca gggtcggaac aggagagcgc acgagggagc ttccaggggg gaacgcctgg   | 4260 |
| tatctttata gtctgtcggg gtttcgcac ctctgacttg agcgtcgatt tttgtgatgc    | 4320 |
| tcgtcagggg ggccgagcct atggaaaaac gccagcaacg cggccttttt acggttcctg   | 4380 |
| gcctttttgt ggoccttttg tcacatgttc tttcctgcgt tatccctga ttctgtggat    | 4440 |
| aaccgtaatta ccgcctttga gtgagctgat accgctcgcc gcagccgaac gaccgagcgc  | 4500 |
| agcagtcag tgagcgagga agcggaagag cgctgatgc ggtattttct ccttacgcct     | 4560 |
| ctgtgcggta tttcacaccg catatatggg gaactctcag tacaatctgc tctgatgccg   | 4620 |
| catagttaag ccagtataca ctcgcctatc gctacgtgac tgcaaggaga tggcgccaa    | 4680 |
| cagtcccccg gccacggggc ctgccaccat acccagccg aaacaagcgc tcatgagccc    | 4740 |
| gaagtggcga gcccgatctt ccccatcggt gatgtcgccg atataggcgc cagcaaccgc   | 4800 |
| acctgtggcg ccgggtgatgc cggccacgat gcgtccggcg tagaggatct tgagatctcg  | 4860 |
| atccgcgaaa t  | 4871 |

<210> 8  
 <211> 4886  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> pMH21 plasmid full sequence

Substitute CRF Seq Listing 2009-09-30

```

<400>      8
taatacgact cactataggg agaccacaac ggtttccctc tagaaataat tttgtttaac      60
tttaagaagg agatatacat atggaggtga agctggtgga atctggagga ggcttagtgc      120
agcctggagg gtccctgaaa ctctctgtg caacctctgg attcactttc agtgactatt      180
acatgtattg ggttcgccag actccagaga agaggctgga gtgggtcgca tacattagta      240
atgatgatag ttcgcgcgct tattcagaca ctgtaaaggg ccggttcacc atctccagag      300
acaatgccag gaacaccctc tacctgcaaa tgagccgtct gaagtctgag gacacagcca      360
tatattcctg tgcaagagga ctggcctggg gagcctgggt tgccttactgg ggccaaggga      420
ctctggtcac tgtctctgca gccaaaacga cccccccatc tgtctatcca ctggccctctg      480
gatctgctgc ccaaactaac tccatggtga cctggggatg cctgggtcaag ggctatcttc      540
ctgagccagt gacagtgacc tggaaactct gatccctgtc cagcgggtgtg cacaccttcc      600
cagctgtcct gcagtctgac ctctacactc tgagcagctc agtgactgtc cctccagca      660
cctggcccag cgagaccgtc acctgcaacg ttgcccaccc gcccagcagc accaagggtg      720
acaagaaaat tgtgcccagg gattgtggta gtaagccttg cataagtaca aaagcttctg      780
gtggtggcgg atctggaggt cccgagggcg gcagcctggc cgcgtgacc gcgcaccagg      840
cttgccacct gccgctggag actttcaccg gtcacgcga gccgcgcggc tgggaacaac      900
tggagcagtg cggctatccg gtgcagcggc tggtcgcoot ctacctggcg gcgcggctgt      960
cgtggaacca ggtcgaccag gtgatccgca acgccttggc cagccccggc agcggcgggcg      1020
acctgggcga agcgatccgc gagcagccgg agcagggccg tctggccctg acctggccg      1080
ccgcgagag cgagcgcttc gtccggcagg gcaccggcaa cgacgaggcc ggcgcgcca      1140
acggcccggc ggacagcggc gacgccttgc tggagcgcaa ctatccact ggcgcgaggt      1200
tctcggcgga cggcgcgac gtcagcttca gcaccgcgg cagcgagaac tggacggtg      1260
agcggctgct ccaggcgca cgcctaactg aggagcgcg ctatgtgttc gtcggtacc      1320
acggcacctt cctcgaagcg gcgcaaagca tcgtcttcgg cggggtgcgc gcgcgcagcc      1380
aggacctcga cgggatctgg cggggtttct atatcgccgg cgatccggcg ctggcctacg      1440
gtacgcccga ggaccaggaa cccgacgcac gcggccggat ccgcaacggt gccctgctgc      1500
gggtctatgt gccgcgctcg agcctgcggg gcttctaccg caccagcctg acctggccg      1560
cgccggaggc ggcgggcgag gtcgaaaggc tgatcgcca tccgtgcgc ctgcgcctgg      1620
acgccatcac cggccccgag gaggaaggcg ggcgctgga gaccattctc ggctggccgc      1680
tggccgagcg caccgtggtg attccctcgg cgatccccac cgaccgcgc aacgtcggcg      1740

```

# Substitute CRF Seq Listing 2009-09-30

|             |             |             |            |            |             |      |
|-------------|-------------|-------------|------------|------------|-------------|------|
| gcgacctcga  | cccgccagc   | atcccdgaca  | aggaacaggc | gatcagcgcc | ctgccggact  | 1800 |
| acgccagcca  | gcccggcaaa  | ccgcgcgcg   | aggacctgaa | gtaactgccg | cgaccggcgc  | 1860 |
| gctcccttcg  | caggagccgg  | cctctctggg  | gcctggccat | acatcagggt | ttcctgatgc  | 1920 |
| cagcccaatc  | gaatatgaat  | tcggctgcta  | acaaagcccg | aaaggaagct | gagttggctg  | 1980 |
| ctgccaccgc  | tgagcaataa  | ctagcataac  | cccttggggc | tctaaacggg | tcttgagggg  | 2040 |
| ttttttgctg  | aaaggaggaa  | ctatatccgg  | atcggagatc | aattctggcg | taatagcgaa  | 2100 |
| gaggcccgca  | ccgatcgccc  | ttcccaacag  | ttgcgtagcc | tgaatggcga | atgggacgcg  | 2160 |
| ccctgtagcg  | gcgcattaag  | cgcggcgggt  | gtggtgggta | cgcgcagcgt | gaccgctaca  | 2220 |
| cttgccagcg  | ccctagcgcc  | cgtccctttc  | gctttcttcc | cttcctttct | cgcacgcttc  | 2280 |
| gcgggctttc  | cccgtaagc   | tctaaatcgg  | gggtccctt  | tagggttccg | atttagtgct  | 2340 |
| ttacggcacc  | tcgaccccaa  | aaaacttgat  | tagggtgatg | gttcaogtag | tgggcccacg  | 2400 |
| ccctgataga  | cggtttttcg  | ccctttgacg  | ttggagtcca | cgttctttta | tagtggaactc | 2460 |
| ttgttccaaa  | ctggaacaac  | actcaacct   | atctcggtct | attcttttga | tttataaggg  | 2520 |
| attttgccga  | tttcggccta  | ttgggttaaaa | aatgagctga | tttaacaaaa | atttaacgcg  | 2580 |
| aattttaaca  | aaatattaac  | gtttacaatt  | tcaggtggca | cttttcgggg | aaatgtgcgc  | 2640 |
| ggaaccccta  | tttgtttatt  | tttctaaata  | cattcaataa | tgtatccgct | catgagacaa  | 2700 |
| taacctgat   | aatgcttca   | ataatattga  | aaaaggaaga | gtatgagtat | tcaacatttc  | 2760 |
| cgtgtcgccc  | ttattccctt  | ttttggcgca  | ttttgccttc | ctgtttttgc | tcaccagaa   | 2820 |
| acgctgggtga | aagtaaaaga  | tgctgaagat  | cagttgggtg | cacgagtggg | ttacatcgaa  | 2880 |
| ctggatctca  | acagcggtaa  | gatccttgag  | agttttcgcc | ccgaagaacg | ttttccaatg  | 2940 |
| atgagcaactt | ttaaagttct  | gctatgtggc  | gcggtattat | cccgatttga | cgcggggcaa  | 3000 |
| gagcaactcg  | gtcgccgcct  | acactattct  | cagaatgact | tggttgagta | ctcaccagtc  | 3060 |
| acagaaaagc  | atcttacgga  | tggcatgaca  | gtaagagaat | tatgcagtgc | tgccataagc  | 3120 |
| atgagtgata  | acaactgcggc | caacttactt  | ctgacaacga | tcggaggacc | gaaggagcta  | 3180 |
| accgcttttt  | ttcacaacat  | gggggatcat  | gtaactcgcc | ttgatcgttg | ggaaccggag  | 3240 |
| ctgaatgaag  | ccataccaaa  | cgcgcagcgt  | gacaccacga | tgccgttagc | aatggcaaca  | 3300 |
| acgttgcgca  | aactattaac  | tggcgaacta  | cttactctag | cttcccgga  | acaattaata  | 3360 |
| gactggatgg  | aggcggataa  | agttgcagga  | ccacttctgc | gctcggccct | tcgggtggc   | 3420 |
| tggttttattg | ctgataaate  | tggagccgggt | gagcgtgggt | ctcgcggtat | cattgcagca  | 3480 |

Substitute CRF Seq Listing 2009-09-30

|  |      |
|--|------|
| ctggggccag atggtaagcc ctcccgatc gtagttatct acacgacggg cagtcaggca   | 3540 |
| actatggatg aacgaaatag acagatcgct gagataggtg cctcactgat taagcattgg  | 3600 |
| taactgtcag accaagttta ctcatatata ctttagattg attttaaact tcatttttaa  | 3660 |
| ttttaaagga tctaggtgaa gatccttttt gataatctca tgaccaaaat cccttaacgt  | 3720 |
| gagttttcgt tccactgagc gtcagacccc gtagaaaaga tcaaaggatc ttcttgagat  | 3780 |
| cccttttttc tgccggtaat ctgctgcttg caaacaaaaa aaccacggct accagcggtg  | 3840 |
| gtttgtttgc cggatcaaga gctaccaact ctttttcoga aggttaactgg cttcagcaga | 3900 |
| gcccagatac caaataactgt ccttctagtg tagccgtagt taggcacca cttcaagaac  | 3960 |
| tctgtagcac cgcctacata cctcgctctg ctaatcctgt taccagtggc tgctgccagt  | 4020 |
| ggcgataagt cgtgtcttac cgggttggaac tcaagacgat agttaccgga taaggcgag  | 4080 |
| cggtcgggct gaacgggggg ttctgtgcaca cagcccagct tggagcgaac gacctacac  | 4140 |
| gaactgagat acctacagcg tgagcattga gaaagcgcca cgtttccga agggagaaag   | 4200 |
| ggcgacaggt atccggtaag cggcagggtc ggaacaggag agcgacagag ggagcttcca  | 4260 |
| ggggggaacg cctgggtatct ttatagtcct gtccgggttc gccacctctg acttgagcgt | 4320 |
| cgatttttgt gatgctcgtc agggggggcg agcctatgga aaaacgccag caacgcggcc  | 4380 |
| tttttacggt tcttggcctt ttgctggcct tttgctcaca tgttctttcc tgcgttatcc  | 4440 |
| cctgattctg tggataaccg tattaccgcc tttagagtga ctgataccgc tgcgcgagc   | 4500 |
| cgaacgaccg agcgacagca gtcagtgagc gaggaagcgg aagagcgct gatgcggtat   | 4560 |
| tttctcctta cgcctctgtg cggatatttc caccgcatat atggtgcact ctcagtacaa  | 4620 |
| tctgctctga tgcgcgatag ttaagccagt atacactccg ctatcgctac gtgactgcaa  | 4680 |
| ggagatggcg cccaacagtc cccgggccac ggggcctgcc accataacca cgcgaaaca   | 4740 |
| agcgtcctg agcccgaagt ggcgagcccg atcttcccca tcggtgatgt cggcgatata   | 4800 |
| ggcgccagca accgcacctg tggcgccggt gatgcggcc acgatgcgtc cggcgtagag   | 4860 |
| gatcttgaga tctcgatccg cgaaat                                       | 4886 |

<210> 9  
 <211> 4871  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> pCE2 plasmid full sequence

|   |    |
|---|----|
| <400> 9   |    |
| taatacgact cactataggg agaccacaac ggtttccctc tagaaataat tttgtttaac | 60 |

Substitute CRF Seq Listing 2009-09-30

|   |      |
|---|------|
| tttaagaagg agatatacat atggatgtga agctgggtgga atctggagga ggcttagtgc  | 120  |
| agcctggagg gtcctgaaa ctctcctgtg caacctctgg attcactttc agtgactatt    | 180  |
| acatgtattg ggttcgccag actccagaga agaggctgga gtgggtcgca tacattagta   | 240  |
| atgatgatag ttccgcgcgt tattcagaca ctgtaaaggg ccggttcacc atctccagag   | 300  |
| acaatgccag gaacaccctc tacctgcaaa tgagccgtct gaagtctgag gacacagcca   | 360  |
| tatatctctg tgcaagagga ctggcctggg gagcctgggt tgcctactgg ggccaagga    | 420  |
| ctctggtcac tgtctctgca gccaaaacga ccccccatc tgtctatcca ctggccctg     | 480  |
| gatctgctgc ccaaaactaac tccatgggtga cctgggatg cctgggtcaag ggctattttc | 540  |
| ctgagccagt gacagtgacc tggaaactct gatccctgtc cagcgggtgtg cacaccttc   | 600  |
| cagctgtcct gcagtctgac ctctacactc tgagcagetc agtgactgtc cctccagca    | 660  |
| cctggcccag cgagaccgtc acctgcaacg ttgcccaccc ggccagcagc accaaggtgg   | 720  |
| acaagaaaat tgtgcccagg gattgtggta gtaagccttg cataagtaca aaagcttccg   | 780  |
| gaggccccga gggcggcagc ctggccgcgc tgaccgcgca ccaggcttgc cacctgcgc    | 840  |
| tggagacttt caccogtcat cgccagccgc gcggtggga acaactggag cagtgcggct    | 900  |
| atccggtgca gcggtgtgtc gccctctacc tggcggcgcg gctgtcgtgg aaccaggtcg   | 960  |
| accaggtgat ccgcaacgcc ctggccagcc ccggcagcgg cggcgacctg ggccaagcga   | 1020 |
| tcgcgagca gccggagcag gccogtctgg cctgacctt ggccgcgcgc gagagcgagc     | 1080 |
| gcttcgtccg gcagggcacc ggcaacgacg aggcgggcgc ggccaacggc ccggcggaca   | 1140 |
| gcgcgacgc cctgctggag cgcaactatc ccactggcgc ggagtctctc ggcgacggcg    | 1200 |
| gcgacgtcag ctccagcacc cgcggcacgc agaactggac ggtggagcgg ctgctccagg   | 1260 |
| cgcaccgcca actggaggag cgcggctatg tgttcgtcgg ctaccacggc accttctctg   | 1320 |
| aagcggcgca aagcatcgtc ttccggcggg tgccgcgcgc cagccaggac ctcgacgca    | 1380 |
| tctggcgcgg ttctatatat gccggcgatc cggcgctggc ctacggctac gccaggacc    | 1440 |
| aggaaccgca cgcacgcggc cggatccgca acggtgccct gctgcgggtc tatgtgccgc   | 1500 |
| gctcgagcct gccgggcttc taccgcacca gcctgacctt ggccgcgcgc gaggcggcg    | 1560 |
| gcgaggctga acggtgate ggccatccgc tgccgctgcg cctggacgcc atcacggcc     | 1620 |
| ccgaggagga aggcgggcgc ctggagacca ttctcggctg gccgctggc gagcgaccg     | 1680 |
| tgggtgattc ctcggcgac cccaccgacc cgcgcaacgt cggcggcgac ctcgacctg     | 1740 |
| ccagcatccc cgacaaggaa caggcgatca gcgcctgcc ggactacgcc agccagcccc    | 1800 |
| gcaaaccgcc gcgcgaggac ctgaagtaac tgccgcgacc ggccggctcc cttcgcagga   | 1860 |

# Substitute CRF Seq Listing 2009-09-30

|             |              |            |            |             |            |      |
|-------------|--------------|------------|------------|-------------|------------|------|
| gcgggoccttc | tcgggggocctg | gccatacatc | agggttttcc | gatgocagoc  | caatogaata | 1920 |
| tgaattcggc  | tgctaacaaa   | gcccgaagg  | aagctgagtt | ggctgctgcc  | accgctgagc | 1980 |
| aataactagc  | ataaccocctt  | gggcctctaa | acgggtcttg | aggggttttt  | tgctgaaagg | 2040 |
| aggaactata  | tccggatcgg   | agatcaattc | tggcgtaata | gcgaagaggc  | cgcacccgat | 2100 |
| cgcccttccc  | aacagttgcg   | tagcctgaat | ggcgaatggg | acgcgcocctg | tagcggcgca | 2160 |
| ttaagcgcg   | cggtgtggt    | ggttacgcgc | agcgtgaccg | ctacacttgc  | cagcgcccta | 2220 |
| gcgcgcgctc  | ctttcgtttt   | cttcoccttc | ttctctcgca | cgttcgcggg  | ctttcccggt | 2280 |
| caagctctaa  | atcggggggt   | ccctttagg  | ttccgattta | gtgctttacg  | gcacctcgac | 2340 |
| cccaaaaaac  | ttgattagg    | tgatggttca | cgtagtgggc | catcgccctg  | atagacgggt | 2400 |
| tttcgcocctt | tgacgttggg   | gtccacgttc | tttaatatgt | gactcttggt  | ccaaactgga | 2460 |
| acaacactca  | accctatctc   | ggtctattct | tttgatttat | aagggttttt  | gccgatttcg | 2520 |
| gcctatttgt  | taaaaaatga   | gtgattttaa | caaaaattta | acgcgaattt  | taacaaaata | 2580 |
| ttaacgttta  | caatttcagg   | tggcactttt | cggggaaatg | tcgcgcgaac  | ccctatttgt | 2640 |
| ttatttttct  | aaatacattc   | aaatatgtat | ccgctcatga | gacaataacc  | ctgataaatg | 2700 |
| cttcaataat  | attgaaaaag   | gaagagtatg | agtattcaac | atttcctgtg  | cgcctttatt | 2760 |
| cccttttttg  | cggcattttg   | ccttcctgtt | tttgctcacc | cagaaacgct  | ggtgaaagta | 2820 |
| aaagatgctg  | aagatcagtt   | gggtgcacga | gtgggttaca | tcgaactgga  | tctcaacagc | 2880 |
| ggtaagatcc  | ttgagagttt   | tcgccccgaa | gaacgttttc | caatgatgag  | cactttttaa | 2940 |
| gttctgctat  | gtggcgcggt   | attatcccg  | attgacgcgc | ggcaagagca  | actcggctgc | 3000 |
| cgcatacact  | attctcagaa   | tgacttgggt | gagtactcac | cagtcacaga  | aaagcatctt | 3060 |
| acggatggca  | tgacagtaag   | agaattatgc | agtgtgccta | taagcatgag  | tgataacact | 3120 |
| gcggccaact  | tacttctgac   | aacgatcgga | ggaccgaagg | agctaaccgc  | tttttttcac | 3180 |
| aacatggggg  | atcatgtaac   | tcgccttgat | cgttgggaac | cggagctgaa  | tgaagccata | 3240 |
| ccaaacgacg  | agcgtgacac   | cacgatgcct | gtagcaatgg | caacaacggt  | gcgcaaacta | 3300 |
| ttaactggcg  | aactacttac   | tctagcttcc | cggcaacaat | taatagactg  | gatggaggcg | 3360 |
| gataaagttg  | caggaccact   | tctgcgctcg | gcccttcggg | ctggctgggt  | tattgctgat | 3420 |
| aaatctggag  | cgggtgagcg   | tgggtctcgc | ggtatcattg | cagcactggg  | gccagatggg | 3480 |
| aagccctccc  | gtatcgtagt   | tatctacacg | acgggcagtc | aggcaactat  | ggatgaacga | 3540 |
| aatagacaga  | tcgctgagat   | aggtgcctca | ctgattaagc | attggtaact  | gtcagaccaa | 3600 |

Substitute CRF Seq Listing 2009-09-30

|   |      |
|---|------|
| gtttactcat atatacttta gattgattta aaacttcatt tttaatttaa aaggatctag   | 3660 |
| gtgaagatec tttttgataa tctcatgacc aaaatccctt aacgtgagtt ttogttccac   | 3720 |
| tgagcgtcag accccgtaga aaagatcaaa ggatcttctt gagatccctt tttctgcgc    | 3780 |
| gtaatctgct gcttgcaaac aaaaaaacca ccgctaccag cggtggtttg tttgccgat    | 3840 |
| caagagctac caactctttt tccgaaggta actggcttca gcagagcgca gataccaaat   | 3900 |
| actgtccttc tagtgtagcc gtagttaggc caccacttca agaactctgt agcaccgcct   | 3960 |
| acatacctcg ctctgctaata cctgttacca gtggtctgtg ccagtggcga taagtctgt   | 4020 |
| cttaccgggt tggactcaag acgatagtta ccggataagg cgcagcggtc gggctgaacg   | 4080 |
| gggggttcgt gcacacagcc cagcttgag cgaacgacct acaccgaact gagataccta    | 4140 |
| cagcgtgagc attgagaaaag cgcacgctt cccgaaggga gaaaggcggga caggatatccg | 4200 |
| gtaagcggca gggctcggaac aggagagcgc acgagggagc ttccaggggg gaacgcctgg  | 4260 |
| tatctttata gtctgtcgg gtttcgccac ctctgacttg agcgtcgatt tttgtgatgc    | 4320 |
| tcgtcagggg ggcgagcct atggaaaaac gccagcaacg cggccttttt acggttcctg    | 4380 |
| gccttttgc ggccttttgc tcacatgttc tttctgcgt tatccctga ttctgtggat      | 4440 |
| aaccgtatta ccgcctttga gtgagctgat accgctcgcc gcagccgaac gaccgagcgc   | 4500 |
| agcgagtcag tgagcgagga agcgggaagag cgcctgatgc ggtattttct ccttacgcct  | 4560 |
| ctgtgcggta tttcacacog catatatggg gcaactctag tacaatctgc tctgatgccg   | 4620 |
| catagttaag ccagtataca ctccgctatc gctacgtgac tgcaaggaga tggcgcccaa   | 4680 |
| cagtcccccg gccacggggc ctgccaccat acccagcgc aaacaagcgc tcatgagccc    | 4740 |
| gaagtggcga gcccgatctt ccccatcggt gatgtcggcg atataggcgc cagcaaccgc   | 4800 |
| acctgtggcg ccggtgatgc cggccacgat gcgtccggcg tagaggatct tgagatctcg   | 4860 |
| atccgcgaaa t  | 4871 |

<210> 10  
 <211> 3703  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> pMC75 plasmid full sequence

|   |     |
|---|-----|
| <400> 10  |     |
| taatacgact cactataggg agaccacaac ggtttccctc tagaaataat tttgtttaac | 60  |
| tttaagaagg agatatacat atggatgtgc tgatgacca gtctccattg agtttacctg  | 120 |
| tcagtcttgg agatcaagcc tccatctctt gcagatctag tcagatcatt gtacatagta | 180 |

Substitute CRF Seq Listing 2009-09-30

|  |      |
|--|------|
| atggaaacac ctatttagaa tggtagctgc agaaaccagg ccagtctcca aagctcctga  | 240  |
| tctacaaagt ttccaaccga ttttctgggg tcccagacag gttcagtggc agtggatcag  | 300  |
| ggacagattt cacactcaag atcagcagag tggaggetga ggatctggga gtttattact  | 360  |
| gctttcaagg ttcacatgtt ccattcacgt tcggctcggg gacaaagttg gaaataaaac  | 420  |
| gggtgatgc tgcaccaact gtatccatct tcccaccatc cagtgagcag ttaacatctg   | 480  |
| gaggtgcctc agtcgtgtgc ttcttgaaca actttctacc caaagacatc aatgtcaagt  | 540  |
| ggaagattga tggcagtga cgcacaaaatg gcgtcctgaa cagttggact gatcaggaca  | 600  |
| gcaaagacag cacctacagc atgagcagca ccttcacgtt gaccaaggac gagtatgaac  | 660  |
| gacataacag ctatacctgt gagggcactc acaagacatc aacttcaccc attgtcaaga  | 720  |
| gcttcaacag gaatgagtgt ggtaaagctt aatgaattcg gctgctaaca aagcccgaaa  | 780  |
| ggaagctgag ttggctgctg ccaccgctga gcaataacta gcataacccc ttgggcctct  | 840  |
| aaacgggtct tgaggggttt tttgctgaaa ggaggaacta tatccggatc ggagatcaat  | 900  |
| tctggcgtaa tagcgaagag gcccgccacg atcgcccttc ccaacagttg cgtagcctga  | 960  |
| atggcgaaatg ggacgcgcgc tgtagcggcg cattaagcgc ggcgggtgtg gtggttacgc | 1020 |
| gcagcgtgac cgtacactt gccagcgccc tagcgccgcg tcttttcgct ttcttccctt   | 1080 |
| cctttctcgc cacttccgc ggctttcccc gtcaagctct aaatcggggg ctccctttag   | 1140 |
| ggttccgatt tagtgcttta cggcacctcg accccaaaaa acttgattag ggtgatgggt  | 1200 |
| cacgtagtgg gccatcgccc tgatagacgg tttttcgccc tttagcgttg gagtccacgt  | 1260 |
| tctttaatag tggactcttg ttccaaactg gaacaacact caaccctatc tcggctctatt | 1320 |
| cttttgattt ataagggtt ttgcgattt cggcctattg gttaaaaaat gagctgattt    | 1380 |
| aacaaaaatt taacgcgaat ttttaacaaa tattaacgtt tacaatttca ggtggcactt  | 1440 |
| ttcggggaaa tgtgcgcgga acccctattt gtttattttt ctaaatacat tcaaatatgt  | 1500 |
| atccgctcat gagacaataa cctgataaaa tgcttcaata atattgaaaa aggaagagta  | 1560 |
| tgagtattca acatttccgt gtgcgcctta ttcccttttt tcgggcattt tgccttcctg  | 1620 |
| tttttgctca ccagaaaacg ctggtgaaag taaaagatgc tgaagatcag ttgggtgcac  | 1680 |
| gagtgggtta catcgaaact gatctcaaca gcggtaagat ccttgagagt ttccgccccg  | 1740 |
| aagaacgttt tccaatgatg agcactttta aagttctgct atgtggcgcg gtattatccc  | 1800 |
| gtattgacgc cgggcaagag caactcggtc gccgcataca ctattctcag aatgacttgg  | 1860 |
| ttgagtactc accagtcaca gaaaagcatc ttacggatgg catgacagta agagaattat  | 1920 |
| gcagtgctgc cataagcatg agtgataaca ctgcggccaa cttacttctg acaacgatcg  | 1980 |

Substitute CRF Seq Listing 2009-09-30

|   |      |
|---|------|
| gaggaccgaa ggagctaacc gcttttttttc acaacatggg ggatcatgta actcgcccttg | 2040 |
| atcgttggga accggagctg aatgaagcca taccaaacga cgagcgtgac accacgatgc   | 2100 |
| ctgtagcaat ggcaacaacg ttgcgcaaac tattaaactgg cgaactactt actctagctt  | 2160 |
| cccggcaaca attaatagac tggatggagg cggataaagt tgcaggacca cttctgcgct   | 2220 |
| cgcccttcc ggctggctgg tttattgctg ataaatctgg agccggtgag cgtgggtctc    | 2280 |
| gcggtatcat tgcagcactg gggccagatg gtaagccctc ccgtatcgta gttatctaca   | 2340 |
| cgacgggcag tcaggcaact atggatgaac gaaatagaca gatcgtgag ataggtgcct    | 2400 |
| cactgattaa gcattggtaa ctgtcagacc aagtttactc atatatactt tagattgatt   | 2460 |
| taaaacttca tttttaattt aaaaggatct aggtgaagat cctttttgat aatctcatga   | 2520 |
| ccaaaatccc ttaacgtgag ttttcgttcc actgagcgtc agaccccgta gaaaagatca   | 2580 |
| aaggatcttc ttgagatcct tttttctgc gcgtaatctg ctgcttgcaa acaaaaaaac    | 2640 |
| caccgctacc agcggtggtt tgtttgcgg atcaagagct accaactctt tttccgaagg    | 2700 |
| taactggctt cagcagagcg cagataccaa atactgtcct tctagtgtag ccgtagttag   | 2760 |
| gccaccactt caagaactct gtagcacgc ctacatacct cgtcttgcta atcctgttac    | 2820 |
| cagtggctgc tgccagtggc gataagtcgt gtcttacggg gttggactca agacgatagt   | 2880 |
| taccggataa gggcagcgg tcgggctgaa cgggggggtc gtgcacacag ccagcttgg     | 2940 |
| agcgaacgac ctacaccgaa ctgagatacc tacagcgtga gcattgagaa agcgccacgc   | 3000 |
| ttcccgagg gagaaaggcg gacaggtatc cggtaagcgg cagggctcga acaggagagc    | 3060 |
| gcacgaggga gcttccaggg gggaaacgct ggtatcttta tagtcctgtc gggtttcgcc   | 3120 |
| acctctgact tgagcgtcga tttttgtgat gctcgtcagg ggggcccagc ctatggaaaa   | 3180 |
| acgccagcaa cgcggccttt ttacggttcc tggccttttg ctggcctttt gctcacatgt   | 3240 |
| tctttcctgc gttatccctt gattctgtgg ataaccgtat taccgccttt gagtgagctg   | 3300 |
| ataccgctcg ccgcagcga acgaccgagc gcagcgagtc agtgagcgag gaagcggaag    | 3360 |
| agcgctgat ggggtabttt ctcttaacgc atctgtgcgg tatttcacac cgcataatg     | 3420 |
| gtgcactctc agtacaatct gctctgatgc cgcatagtta agccagtata cactccgcta   | 3480 |
| togctacgtg actgcaagga gatggcgccc aacagtcccc cggccacggg gcctgccacc   | 3540 |
| atacccacgc cgaaacaagc gctcatgagc ccgaagtggc gagcccgatc ttccccatcg   | 3600 |
| gtgatgtcgg cgatataggc gccagcaacc gcacctgtgg cgcgggtgat gccggccacg   | 3660 |
| atcgctcgg cgtagaggat cttgagatct cgatccgcga aat                      | 3703 |

# Substitute CRF Seq Listing 2009-09-30

```

<210>      11
<211>      5576
<212>      DNA
<213>      Artificial Sequence
<220>
<223>      pLSC52 plasmid full sequence

<400>      11
taatacgact cactataggg agaccacaac ggtttccctc tagaaataat tttgtttaac      60
tttaagaagg agatatacat atggatgtga agctgggtgga atctggagga ggcttagtgc      120
agcctggagg gtccctgaaa ctctcctgtg caacctctgg attcaacttc agtgactatt      180
acatgtattg ggctcgccag actccagaga agaggctgga gtgggtcgca tacattagta      240
atgatgatag ttccgcgcgt tattcagaca ctgtaaaggg ccggttcacc atctccagag      300
acaatgccag gaacaccctc taactgcaaa tgagccgtct gaagtctgag gacacagcca      360
tatattcctg tgcaagagga ctggcctggg gagcctgggt ttgcttactgg ggccaagggg      420
ctctgggtcac tgtctctgca gccaaaacga cccccccatc tgtctatcca ctggccccctg      480
gatctgctgc ccaaactaac tccatggtga cctggggatg cctgggtcaag ggctatttcc      540
ctgagccagt gacagtgacc tggaaactctg gatccctgtc cagcgggtgtg cacaccttcc      600
cagctgtcct gcagtctgac ctctacactc tgagcagctc agtgactgtc cctccagca      660
cctggccccag cgagaccgtc acctgcaacg ttgccacccc ggccagcagc accaagggtgg      720
acaagaaaat tgtgcccagg gattgtggtg agcccaaate ttgtgacaaa actcacacat      780
gcccaccgtg cccagcacct gaactcctgg ggggaccgtc agtcttctc ttccccccaa      840
aaccgaagga caccctcatg atctcccgga cccctgaggt cacatgcgtg gtggtggacg      900
tgagccacga agaccctgag gtcaagttca actggtacgt ggacggcgtg gaggtgcata      960
atgccaagac aaagccgcgg gaggagcagt acaacagcac gtaccgtgtg gtcagcgtcc     1020
tcaccgtcct gcaccaggac tgggtgaatg gcaaggagta caagtgcaag gtctccaaca     1080
aagccctccc agcccccatc gagaaaacca tctccaaagc caaagggcag ccccgagaac     1140
cacagggtga caccctgccc ccattccggg atgagctgac caagaaccag gtcagcctga     1200
cctgcctggg caaaggcttc tatccagcg acatcgccgt ggagtgggag agcaatgggc     1260
agccggagaa caactacaag accacgcctc ccgtgctgga ctccgacggc tcctttcttc     1320
tctacagcaa gctcaccgtg gacaagagca ggtggcagca ggggaacgtc ttctcatget     1380
ccgtgatgca tgaggctctg cacaaccact acacgcagaa gagcctctcc ctgtctccgg     1440
gtaaaggcgg aggcggatcc ggtggtggcg gttctaaagc ttccggaggt cccgagggcg     1500

```

Substitute CRF Seq Listing 2009-09-30

|   |      |
|---|------|
| gcagcctggc cgcgctgacc ggcaccagg cttgccacct gccgctggag actttcaccc  | 1560 |
| gtcatcgcca gccgcgcggc tgggaacaac tggagcagtg cggctatccg gtgcagcggc | 1620 |
| tggtcgcct ctacctggcg gcgcggctgt cgtggaacca ggtcgaccag gtgatccga   | 1680 |
| acgccttggc cagccccggc agcggcggcg acctgggcga agcgatccgc gagcagcgg  | 1740 |
| agcaggcccg tctggcctg acctggccg ccgcgcagag cgcgccttc gtccggcagg    | 1800 |
| gcaccggcaa cgaagaggcc gggcgggcca accgccccgc ggacagcggc gacgcctgc  | 1860 |
| tggagcgcaa ctatccact ggcgcgaggt tcctcggcga cggcggcgac gtcagcttca  | 1920 |
| gcaccgcgg cagcagaac tggacgggtg agcggctgt ccaggcgac cgcgaactgg     | 1980 |
| aggagcggc ctatgtgttc gtggctacc accgcacctt cctcgaagcg gcgcaaagca   | 2040 |
| tcgtcttcgg cggggtgcgc gcgcgcagcc aggaacctga cgcgatctgg cgcggtttct | 2100 |
| atatcgccg cgatccggcg ctggcctacg gctacgcca ggaccaggaa cccgacgcac   | 2160 |
| gcggccggat ccgcaacggg gccctgctgc gggcttatgt gccgcgctcg agcctgcgg  | 2220 |
| gcttctacg caccagcctg acctggccg cgcggaggc ggcgggcgag gtgaaacggc    | 2280 |
| tgatcgcca tccgtgcg ctgcgcctgg acgcctcac cggccccgag gaggaaggcg     | 2340 |
| ggcgcttga gaccattctc ggtggccgc tggccgagcg caccgtggtg attccctcgg   | 2400 |
| cgatccccac cgaaccgcgc aacgtcggcg gcgacctga ccgctccagc atccccgaca  | 2460 |
| aggaacaggc gatcagcgc ctgcggact accccagcca gcccgcaaa ccgcgcgcg     | 2520 |
| aggacctgaa gtaactgcc cgaaccggcg gctcccttc caggagccg ccttctcggg    | 2580 |
| gcctggocat acatcagggt ttctgatgc cagcccaatc gaatatgaat tcggctgcta  | 2640 |
| acaaagccc aaaggaagct gagttggctg ctgccacgc tgagcaataa ctgacataac   | 2700 |
| cccttgggccc tctaaacggg tcttgagggg ttttttgctg aaaggaggaa ctatatccg | 2760 |
| atcggagatc aattctggcg taatagcgaa gaggcocgca ccgatcgccc tccccacag  | 2820 |
| ttgcgtagcc tgaatggcg atgggacgc cctgtagcg gcgcattaag cgcggcgggt    | 2880 |
| gtggtggtta cgcgcagcgt gaccgctaca cttgccagcg ccttagcgcc cgtcccttc  | 2940 |
| gctttcttcc ctctcttct cgcacgttc gccgcttcc cccgtcaagc tctaaatcgg    | 3000 |
| gggctccctt tagggttccg atttagtgc ttacggcacc tcgaccccaa aaaacttgat  | 3060 |
| tagggtagtg gttcacgtag tgggcatcg cctgataga cggtttttcg ccctttgacg   | 3120 |
| ttggagtcca cgttctttaa tagtgactc ttgttccaaa ctggaacaac actcaaccct  | 3180 |
| atctcgtctc attcttttga ttataaggg attttgccga ttccggccta ttggttaaaa  | 3240 |
| aatgagctga ttaacaaaa atttaacgcg aattttaaca aaatattaac gtttacaatt  | 3300 |

Substitute CRF Seq Listing 2009-09-30

|  |      |
|--|------|
| tcagggtggca cttttcgggg aaatgtgcgc ggaaccccta tttgtttatt tttctaaata | 3360 |
| cattcaaata tgtatccgct catgagacaa taacctgat aaatgcttca ataattattga  | 3420 |
| aaaaggaaga gtatgagtat tcaacatttc cgtgtcgccc ttattccctt ttttgcggca  | 3480 |
| ttttgccttc ctgtttttgc tcaccacagaa acgttggtga aagtaaaaga tgctgaagat | 3540 |
| cagttgggtg cagcagtggtg ttacatcgaa ctggatctca acagcggtaa gatccttgag | 3600 |
| agttttcgcc ccgaagaacg ttttccaatg atgagcactt ttaaagttct gotatgtggc  | 3660 |
| gggttattat cccgtattga cgcggggcaa gagcaactcg gtgcgcgat aactattct    | 3720 |
| cagaatgact tggttgagta ctcaaccagtc acagaaaagc atcttacgga tggcatgaca | 3780 |
| gtaagagaat tatgcagtgc tgccataagc atgagtgata aactgcggc caacttactt   | 3840 |
| ctgacaacga tcggaggacc gaaggagcta accgcttttt ttcacaacat ggggatcat   | 3900 |
| gtaactcgcc ttgatcgttg ggaaccggag ctgaatgaag ccataccaaa cgacgagcgt  | 3960 |
| gacaccacga tgccctgtagc aatggcaaca acgttgcgca aactattaac tggcgaacta | 4020 |
| cttactctag cttcccgga acaattaata gactggatgg aggcggataa agttgcagga   | 4080 |
| ccacttctgc gctcgccctt tccggctggc tggtttattg ctgataaatc tggagccggc  | 4140 |
| gagcgtgggt ctgcgggtat cattgcagca ctggggccag atggtaagcc ctcccgatc   | 4200 |
| gtagttatct acaagacggg cagtcaggca actatggatg aacgaaatag acagatcgt   | 4260 |
| gagatagggtg cctcactgat taagcattgg taactgtcag accaagtta ctcatatata  | 4320 |
| cttttagattg atttaaaact tcatttttaa tttaaaagga tctaggtgaa gatccttttt | 4380 |
| gataatctca tgacaaaaat cctttaacgt gagttttcgt tccactgagc gtcagacccc  | 4440 |
| gtagaaaaaga tcaaaggatc ttcttgagat ctttttttct tgcgcgtaat ctgctgcttg | 4500 |
| caaacaaaaa aaccaccgct accagcggtg gtttgtttgc cggatcaaga gctaccaact  | 4560 |
| ctttttccga aggttaactgg cttcagcaga gcgcagatac caaatactgt ccttctagt  | 4620 |
| tagccgtagt taggccacca cttcaagaac tctgtagcac cgcctacata cctcgtctg   | 4680 |
| ctaactctgt taccagtggc tgctgccagt ggcgataagt cgtgtcttac cgggttgga   | 4740 |
| tcaagacgat agttaccgga taaggcgcag cggtcgggct gaacgggggg ttcgtgcaca  | 4800 |
| cagcccagct tggagcgaac gacctacacc gaactgagat acctacagcg tgagcattga  | 4860 |
| gaaagcgcca cgcttcccgga agggagaaag gcggacaggt atccggtaag cggcagggtc | 4920 |
| ggaacaggag agcgcacgag ggagcttcca ggggggaacg cctggtatct ttatagtcct  | 4980 |
| gtcgggtttc gccacctctg acttgagcgt cgatttttgt gatgctcgtc agggggggccg | 5040 |

Substitute CRF Seq Listing 2009-09-30

|  |      |
|--|------|
| agcctatgga aaaacgccag caacgcggcc tttttacggg tcttggcctt ttgttggcct    | 5100 |
| tttgttcaca tgtttcttcc tgcgttatcc cctgattctg tggataaccg tattaccgcc    | 5160 |
| tttgagttag ctgataccgc tgcgcgcagc cgaacgacgc agcgcagoga gtcagttagc    | 5220 |
| gaggaagcgg aagagcgccct gatgcgggtat tttctcctta cgcattctgt cggtattttca | 5280 |
| caccgcatat atggtgcact ctgagtacaa tctgtcttga tgcgcgatag ttaagccagt    | 5340 |
| atacactccg ctatcgctac gtgactgcaa ggagatggcg cccaacagtc ccccgccac     | 5400 |
| ggggcctgcc accataccca cgcgcgaaac agcgtctatg agcccgaaagt ggcgagcccg   | 5460 |
| atcttcccca tgggtgatgt cggcgatata ggcgcagca accgcacctg tggcgccggt     | 5520 |
| gatgcgggcc acgatgcgtc cggcgtagag gatcttgaga tctcgatccg cgaaat        | 5576 |

<210> 12  
 <211> 4263  
 <212> DNA  
 <213> Artificial Sequence  
 <220>  
 <223> pKL4 plasmid full sequence

|  |     |
|--|-----|
| <400> 12   |     |
| taatacgact cactataggg agaccacaac ggtttccctc tagaaataat tttgtttaac  | 60  |
| tttaagaagg agatatacat atgcattacc atcaccatca cgatgtgaag ctggtggaat  | 120 |
| ctggaggagg cttagtgtag cctggagggt cctgaaact ctctgtgca acctctggat    | 180 |
| tcactttcag tgactattac atgtattggg ttgcgcagac tccagagaag aggcctggagt | 240 |
| gggtcgcata cattagtaat gatgatagtt cgcgcgttta ttcagacact gtaaagggcc  | 300 |
| ggttcaccat ctccagagac aatgccagga acacctcta cctgcaaatg agcgtctga    | 360 |
| agtctgagga cacagccata tttctctgtg caagaggact ggctgggga gcctggtttg   | 420 |
| cttaactggg ccaagggaact ctggtcactg tctctgcagc caaaacgaca ccccatctg  | 480 |
| tctatccact ggcccttgga tctgtgccc aaactaactc catggtgacc ctgggatgcc   | 540 |
| tggtcaaggc ctatttccct gagccagtga cagtgaacct gaactctgga tccctgtcca  | 600 |
| gcggtgtgca cacttccca gctgtcctgc agtctgacct ctacactctg agcagctcag   | 660 |
| tgactgtccc ctccagcacc tggcccagcg agaccgtcac ctgcaacgtt gccaccgcg   | 720 |
| ccagcagcac caagggtggac aagaaaattg tgcccaggga ttgtggtgct aagccttgca | 780 |
| tagctacaca agcttccggt ggtggcggat ctggagggtg cggaagcggg ggtcccgagg  | 840 |
| tgacaggggg aatggcaagc aagtgggac agaagggtat ggacattgcc tatgaggagg   | 900 |
| cggccttagg ttacaaagag ggtggtgttc ctattggcgg atgtcttato aataacaaag  | 960 |

Substitute CRF Seq Listing 2009-09-30

|   |      |
|---|------|
| acggaagtgt tctcggtcgt ggtcacaaca tgagatttca aaagggatcc gccacactac   | 1020 |
| atggtgagat ctccactttg gaaaactgtg ggagattaga gggcaaagtg taaaaagata   | 1080 |
| ccactttgta tacgacgctg tctccatgcg acatgtgtac aggtgccatc atcatgtatg   | 1140 |
| gtattccacg ctgtgtttgtc ggtgagaacg ttaattttcaa aagtaagggc gagaaatatt | 1200 |
| tacaaactag aggtcacgag gttgtttgtg ttgacgatga gaggtgtaaa aagatcatga   | 1260 |
| aacaatttat cgatgaaaga cctcaggatt ggtttgaaga tattggtgag taggaattcg   | 1320 |
| gctgctaaca aagcccgaaa ggaagctgag ttggctgctg ccaccgctga gcaataacta   | 1380 |
| gcataacccc ttgggcctct aaacgggtct tgagggggtt tttgctgaaa ggaggaacta   | 1440 |
| tatccggatc ggagatcaat tctggcgtaa tagcgaagag gcccgcaccg atcgcccttc   | 1500 |
| ccaacagttg cgtagcctga atggcgaaatg ggacgcgcgc tgtagcggcg cattaagcgc  | 1560 |
| ggcgggtgtg gtggttacgc gcagcgtgac cgtacactt gccagcgcgc tagcgcgcgc    | 1620 |
| tcttttcgct ttcttccctt cctttctcgc cacttctgc ggctttcccc gtcaagctct    | 1680 |
| aaatcggggg ctcccttttag ggttccgatt tagtgcttta cggcacctcg accccaaaaa  | 1740 |
| acttgattag ggtgatgggt caagtagtgg gccatcgccc tgatagacgg tttttcgccc   | 1800 |
| tttgacgttg gagtcacgt tctttaatag tggactcttg ttccaaactg gaacaacact    | 1860 |
| caacctatc tcggtctatt cttttgattt ataagggatt ttgccgattt cggcctattg    | 1920 |
| gttaaaaaat gagctgattt aacaaaaatt taacgcgaat ttttaacaaa tattaacgtt   | 1980 |
| tacaatttca ggtggcactt ttccgggaaa tgtgcgcgga accctattt gtttattttt    | 2040 |
| ctaaatacat tcaaatatgt atccgctcat gagacaataa cctgataaa tgcttcaata    | 2100 |
| atattgaaaa aggaagagta tgagtattca acatttccgt gtgcacctta ttcccttttt   | 2160 |
| tgccgcattt tgcccttcctg tttttgctca ccagaaaacg ctggtgaaag taaaagatgc  | 2220 |
| tgaagatcag ttgggtgcac gagggtggtta catcgaactg gatctcaaca gcggtgaagat | 2280 |
| ccttgagagt ttctgccccg aagaacgttt tccaatgatg agcactttta aagttctgct   | 2340 |
| atgtggcgcg gtattatccc gtattgacgc cgggcaagag caactcggtc gccgcataca   | 2400 |
| ctattctcag aatgacttgg ttgagtactc accagtcaca gaaaagcatc ttacggatgg   | 2460 |
| catgacagta agagaattat gcagtgtctc cataagcatg agtgataaca ctgcggccaa   | 2520 |
| cttacttctg acaacgatcg gaggaccgaa ggagctaacc gctttttttc acaacatggg   | 2580 |
| ggatcatgta actcgccttg atcgttggga accggagctg aatgaagcca taccaaacga   | 2640 |
| cgagcgtgac accacgatgc ctgtagcaat ggcaacaacg ttgcgcaaac tattaactgg   | 2700 |
| cgaactactt actctagctt cccggcaaca attaatagac tggatggagg cggataaagt   | 2760 |

Substitute CRF Seq Listing 2009-09-30

|             |              |            |             |             |            |      |
|-------------|--------------|------------|-------------|-------------|------------|------|
| tgcaggacca  | cttctgcgct   | cggcccttcc | ggctggctgg  | tttattgctg  | ataaatcttg | 2820 |
| agccgggtgag | cgtgggtctc   | gcggtatcat | tgcagcaactg | gggccagatg  | gtaagccctc | 2880 |
| ccgtatcgta  | gttatctaca   | cgacgggcag | tcaggcaact  | atggatgaac  | gaaatagaca | 2940 |
| gatcgctgag  | ataggtgcct   | cactgattaa | gcattggtaa  | ctgtcagacc  | aagtttactc | 3000 |
| atatatactt  | tagattgatt   | taaaacttca | tttttaattt  | aaaaggatct  | aggtgaagat | 3060 |
| cctttttgat  | aatctcatga   | ccaaaatccc | ttaacgtgag  | ttttcgttcc  | actgagcgtc | 3120 |
| agaccccgta  | gaaaagatca   | aaggatcttc | ttgagatcct  | ttttttctgc  | gcgtaatctg | 3180 |
| ctgcttgcaa  | acaaaaaaaaac | caccgctacc | agcggtggtt  | tgtttgcggg  | atcaagagct | 3240 |
| accaactctt  | tttccgaagg   | taactggctt | cagcagagcg  | cagataccaa  | atactgtcct | 3300 |
| tctagtgtag  | cgtagttag    | gccaccactt | caagaactct  | gtagcaaccgc | ctacatacct | 3360 |
| cgtctgcta   | atcctgttac   | cagtggctgc | tgccagtggc  | gataagtcgt  | gtcttaccgg | 3420 |
| gttggactca  | agacgatagt   | taccggataa | ggcgcagcgg  | tcgggctgaa  | cggggggttc | 3480 |
| gtgcacacag  | cccagcttgg   | agcgaacgac | ctacaccgaa  | ctgagatacc  | tacagcgtga | 3540 |
| gcattgagaa  | agcgcacgc    | ttcccgaaag | gagaaaggcg  | gacaggtatc  | cggtaagcgg | 3600 |
| cagggctcga  | acaggagagc   | gcacgagggg | gcttccaggg  | gggaacgcct  | ggtatcttta | 3660 |
| tagtctgtc   | gggtttcgc    | acctctgact | tgagcgtcga  | tttttgat    | gctcgtcagg | 3720 |
| ggggccgagc  | ctatggaaaa   | acgccagcaa | cggggccttt  | ttacggttcc  | tggccttttg | 3780 |
| ctggcctttt  | gtcacatgt    | tctttcctgc | gttatccct   | gattctgtgg  | ataaccgtat | 3840 |
| taccgccttt  | gagtgaactg   | ataccgctcg | ccgcagccga  | acgaccgagc  | gcagcgagtc | 3900 |
| agtgagcgag  | gaagcggaag   | agcgctgat  | gcggtatttt  | ctccttacgc  | atctgtgcgg | 3960 |
| tatttcacac  | cgcataatg    | gtgcactctc | agtacaatct  | gctctgatgc  | cgcatagtta | 4020 |
| agccagtata  | cactcogcta   | tcgctacgtg | actgcaagga  | gatggcgccc  | aacagtcccc | 4080 |
| cggccaocggg | gcctgccacc   | atacccacgc | cgaacaagc   | gctcatgagc  | ccgaagtggc | 4140 |
| gagcccgatc  | ttccccatcg   | gtgatgtcgg | cgatataggc  | gccagcaacc  | gcacctgtgg | 4200 |
| cgcgggtgat  | gcccggcaag   | atgcgtccgg | cgtagaggat  | cttgagatct  | cgatccgcga | 4260 |
| aat         |              |            |             |             |            | 4263 |

<210> 13  
 <211> 54  
 <212> PRT  
 <213> Artificial Sequence

Substitute CRF Seq Listing 2009-09-30

<220>

<223> Extension peptide

<220>

<221> VARIANT

<222> (1)..(1)

<223> S or A

<220>

<221> VARIANT

<222> (6)..(6)

<223> S or A

<220>

<221> VARIANT

<222> (8)..(8)

<223> K or Q

<220>

<221> VARIANT

<222> (11)..(50)

<223> GGGGS is present or absent

<400> 13

Xaa Lys Pro Ser Ile Xaa Thr Xaa Ala Ser Gly Gly Gly Gly Ser Gly  
1 5 10 15

Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly  
20 25 30

Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly  
35 40 45

Gly Ser Gly Gly Pro Glu  
50